with them the menstrual flow. After a few months she perceived an enlargement of the uterus, with expelling efforts, increasing at each monthly period. When she came under my care, about six months afterwards, I found the uterus considerably enlarged, the fundus rising to near the level of the umbilicus. The vagina terminated in a cul-de-sac two or three inches deep, puckered at the bottom into a hard and ligamentous cicatrix, beyond which could be felt an apparently solid tumour. Her pains, she said, were intolerable, and she was desirous of something more effectual being done for her relief than the administration of anodynes; accordingly, I proposed the operation of dividing the united parts at the bottom of the vagina, which she consented to at once. By cautious transverse strokes with a narrow-bladed knife I divided the united parts upwards in the direction of the cervix uteri, till the cavity was reached, when about a quart of what appeared to be semi-coagulated blood gushed out. The relief was perfect and immediate. A tent was retained in the aperture for a few days after the operation; since then the wound has been kept from closing by the introduction of a large-sized bougie once or twice a day, and she has menstruated three times since the operation, without difficulty. I did not consider a large opening desirable, regarding the wound as a substitute for the os uteri, and not for the canal of the vagina. On first introducing the finger through the wound, I noticed that it passed at once into the cavity of the uterus, no cervix nor os being felt. Three months have now passed since the operation, and the patient declares she has nothing further to desire on the score of health and comfort. She considers herself as well as she ever was. I do not think it will be safe to dispense with the introduction of an instrument for some time to come; the wound may otherwise close, though it does not seem disposed to do so.

ART. XIV.—*Cases of Inflammation occurring under Peculiar Conditions, with some Thoughts and Reflections on the Nature, Constitution, and Purposes of this Organic Process in the Animal Organism.* By SAMUEL JACKSON, M.D., Emeritus Professor of the Institutes of Medicine in the University of Pennsylvania; Member of the American Philosophical Society; Fellow of the College of Physicians, Philadelphia; Corresponding Member of the Imperial Academy of Medicine of Paris.

PROF. PAGET, in his *Surgical Pathology,* states that "in truth we know less of inflammation than of the reparative process." This admission, by so high an authority, leaves the subject of inflammation an open question, and justifies further attempts to ascertain the nature and intentions, if such exist, of this important organic process of pathology. Inflammation is probably the most common of the disorders that attack man and the more highly organized animals; and occurs in individuals of the most varied constitutions, temperaments, and organic conditions. Inflammation is not a simple process, and consequently its characters are influenced and determined by the above conditions—particularly by the healthy or corrupted state of the blood, one of the chief elements of the process. A common fact proves this statement; a simple prick or incision made with a clean scalpel is perfectly harmless—but if made by one soiled with organic matter in dissection, the blood becomes contaminated, and the slight healthy inflammation necessary to heal the wound is impossible, and death frequently ensues in a few days. Many such cases occur from post-mortem examinations, and some few from anatomical dissections.

It is my impression that the modifications produced by the above conditions in the component elements of inflammation have not been sufficiently studied and analyzed. In the course of my experience I have met with three cases in which acute inflammation was rapidly produced under conditions in which its existence would seem impossible.

CASE I.—The first case was that of Dr. J. R. Monges, a highly respectable French physician, who, escaping from the massacre at St. Domingo, in 1793, sought refuge in our city, where he established a professional reputation and lucrative practice. In 1798 he had an attack of pneumonia of the right lung, from which he recovered, but with that organ chronically damaged. This lesion continued until his death. It was attended, throughout that period, with daily cough and expectoration, mitigated in summer and aggravated in winter, so much as frequently to confine him for a time to his room. Though feeble, he was able to pursue his practice until the last two years of his life. In the commencement of May, 1827, his appetite and digestion gave way, and there ensued a disgust—or, as he called it, a horror for food; he could not bear the sight of it. He was sustained chiefly by light French wines. Anasarca soon ensued, ending with general dropsy. On the 26th May I saw him at 6 P.M. No unusual symptoms appeared; he was evidently approaching his end; was very feeble and pulseless, but with clear intellect. At 10 P. M. I saw him again. On entering his room he exclaimed, " See, Doctor, what a state I am in!" Each hand was supported on a pillow, with all the appearance of an attack of gout—a disease he had not been subject to—swelled, red, warm, and excessively painful An evaporating lotion was immediately applied, which soon arrested the attack.

I saw him again between 2 and 3 A. M. He had fallen into a quiet sleep, from which he awoke after a short time; recognized me, and insisted on my going home to bed. He died not long after daylight on the 27th May, 1827, at the age of 69 years.

In this case acute inflammation was developed in less than four hours, but was arrested in its first stage by the application of a remedy.

The *autopsy* demonstrated the superior lobe of the right lung as being thoroughly disorganized. It was adhering strongly to the ribs, and had the appearance of liver, though of darker colour. Several cavities, none larger than a small walnut, were diffused through this structure, filled with a thick matter similar to that he had expectorated for so many years, and were doubtless the seats of that secretion. The lower lobe was to a great extent normal; air vesicles and crepitation existed, but when cut into, a red fluid escaped rather freely, as though there might have been recent congestion.

CASE II.—September 8, 1840, Mr. B. called on me. He had just arrived from North Carolina by sea in a trading vessel, in the course of which he had been much exposed. He came to consult me respecting periodical spasmodic attacks of the œsophagus, to which he had been subject for seven years. During the attacks he could not swallow either fluids or solids. They had increased in severity of late, and he had become exceedingly emaciated and feeble. On the 9th pleuritic symptoms were developed from exposure on his voyage. He was able to swallow a small quantity of soup. In the evening his sufferings from the pleurisy were intense. There was no cough. Dry-cups and fomentations gave some relief, but he sunk, before morning, from extreme exhaustion.

Post-mortem.—The œsophagus was completely denuded of epithelium from the fauces to the cardiac orifice of the stomach, and the whole mucous membrane destroyed in different portions. A recent effusion of jelly-like, coagulable lymph (fibrin) was adhering to the costal pleura, about the middle of the right side of the thorax, for the space of a moderate-sized hand, and opposite to it on the pulmonary pleura a similar jelly-like mass of the same size was adhering to the middle lobe of the lung: the effusion, from appearance, might be estimated at two ounces at least. The *heart* was pale, wrinkled, and atrophied; the other viscera were normal.

In this case there is an instance of active inflammation of high intensity in an individual in a state of great exhaustion and emaciation from inanition and deficiency of blood.

CASE III.—I was called to see Mr. G., in consultation, whom I had attended four years previously for subacute endocarditis, from which he had recovered. Three years after, he brought on another attack from political excitement and improper living. I found the patient nearly moribund, respiration was difficult and irregular; percussion on the left side, dull and flat, revealed the presence of a large effusion. Auscultation of the heart was impossible and useless. The right side was the seat of sharp pleuritic pains, which had come on early that morning. The previous night, the sense of suffocation had become so intense that he insisted on sitting at an open window without sufficient clothing, although the temperature was below freezing; the relief he felt induced him to remain a long time exposed in that manner. This was, without doubt, the cause of the pleuritic attack. He died towards evening.

The *autopsy* demonstrated hydrothorax of left side; the pericardium was distended with fluid and disorganized. The point of interest was the pleura of the right side. The lung was healthy; a large, soft, jelly-like, coagulated mass of slight brownish tinge was adhering to the costal pleura, at the seat of pain, and a similar mass immediately opposite was attached to the surface of the lung; the two, it was evident, had been united and torn apart by the collapse of the lung when the thorax was opened.

The first case cannot be considered a perfect inflammation; it was the *forming stage arrested by the sedative treatment*; in the other two cases are to be seen samples of the first stage of acute inflammation, fully developed, terminating with the effusion of a large portion of an organizable material. This is the second stage in which there is a conversion of that material into a tissue of a low state of organization.

These two cases are specimens of normal inflammation, or that which was called healthy by John Hunter; they also show the local nature of inflammation, as also its independence of the general circulation, and of the old notion of a *vis-a-tergo*. They also demonstrate that the increased fibrin is generated locally, and appears in the general system through absorption.

In these cases the blood had not been contaminated, nor its crasis been depraved.

The water was in excess (hydræmia); but the solids—albumen, fibrin, and corpuscles—were normal, and these are the active agents and constituents of inflammation.

Inflammation is a complex process, of which the blood is the seat. It is the commonest of the pathological actions of the animal organism, yet formerly it was an impossibility to know its nature, its component elements, or its uses, from the imperfect knowledge of the constitution of the blood and its capillary circulation. Celsus, who lived at the first period of our era, gave it an identity by the derivative definition of it as "swelling, redness, heat, and pain." From that time, not a single fact was added to, or any change made in this formula, venerable with the stamp of age, until the last decade of the eighteenth century (1793). The long, deep lethargy of the medical intellect on this most important process of organic nature was broken up by the original genius, the expansive and vigorous mind of John Hunter. He impressed on medical investigations a higher direction, a more elevated order of subjects, in showing that the laws of life are the only sure basis of medical science; and asserted a principle having an important bearing on inflammation, the vitality of the blood, to which he attributed its power of forming and uniting solids.

He pointed out a most material fact in inflammation, almost forgotten at this time, that there are distinctions in what may be called inflammations. One form was salutary, protective, defensive, and reparatory. This he names true inflammation; "healthy" inflammation (normal would be better). It is the agent or instrument of nature, often named the vis medicatrix, called into action when the primary organic formative or organizing action is disturbed, perverted or rendered destructive by some foreign, adverse, or irritative cause.

Hunter discovered the use or purpose of inflammation, but could not discern the process by which it was effected. In his time, the knowledge of the constitution of the blood was very imperfect, and that of the change it undergoes in inflammation was unknown. His failure was the inevitable consequence of the ignorance of these facts. The most powerful intellects will be baffled in the search of truth in the absence of verified facts.

In the first quarter of this century the principal organic constituents of the blood were determined, and it was ascertained that in health their proportions were definite; thus the cipher per 1000 parts is, of albumen 67 to 70 in the dried state; that of fibrin 3, and of red corpuscles 110 to 140; white corpuscles too numerous to be estimated. In 1840–42, MM. Andral and Gavarret discovered what is now the crowning fact of inflammation, the immediate increase of fibrin in the blood, rising from its normal cipher 3 per 1000 to 5, 7, 9, even to 10.

The fibrin is produced from albumen; these bodies are allotropic (that is, similar in chemical elements, but differing in chemical and physical properties) and are mutually convertible into each other. M. Claude Bernard established this fact and has shown that fibrin exists in the blood of the renal artery, but not in that of the renal vein, while the albumen of the last is increased equally to the lost fibrin.

True, normal, Hunter's "healthy" inflammation, the remedial agent of nature consists, in the augmentation of fibrin in the blood, with local raptus, congestion, and effusion. Without increase of fibrin there is no inflammation; there may be perversion of the plastic nutritive process, or destructive action, as ulceration of an indolent character, stationary and passive to all treatment for months. The process of inflammation or augmentation of fibrin in arresting the first stage of the morbid action existing in a living structure, is the effusion of the liquor sanguinis saturated with fibrin, and filling up the entire seat of the disease and even extending beyond it. Coagulation of its fibrin takes place, and the whole of the structure involved in the disease is at once carried down to the lowest degree of vitality, probably below that of bone or cartilage. All organic action, morbid or natural, is suppressed when this process is perfect; the disease is at an end; it has been, as it were, stamped out. The surreptitious organization when large, for a time remains passive; its removal is effected in several modes, viz., resolution, suppuration, moist gangrene. The process is most clearly demonstrated when it occurs in large organs, as the lungs in pneumonia, in which the different stages advance in regular order, having well defined characters, easily recognized by auscultation and percussion.

It is not necessary to describe the signs of the different stages in pneumonia; they are recapitulated and dwelt upon in every work on that disease, and in general works on practical medicine. It is sufficient to state that blood abstracted in the earliest period, that of congestion or engorgement, when coagulated shows a firm clot, in which the red globules are inclosed, rounded like a cup—whence it is often called cupped—with a dense white layer or crust on its upper surface, which has been named the inflammatory buff, or buffy coat. It is common to all acute inflammatory diseases, and is met with in no other. An apparent exception exists in the blood in a state of anæmia, which, drawn and coagulated, shows on the surface a thin, soft, and mostly imperfect, white layer. The cause of this is the large diminution of the red corpuscles, the fibrin remaining the same.

In pneumonia, when blood is drawn, the greatest attention should be paid to the characters of the coagulum formed. Most valuable indications as to the mode of treatment to be adopted, and the remedies to be employed, will be obtained. If the clot is firm and dense, is not loose and flabby, nor infiltrated by the serum, and if raised by a small scapula or knife run into it, sustains its own weight, and with dense white layer of variable thickness, then, in these facts, is asserted a healthy state of the blood and normal, reparative inflammation; let the doctor watch and take heed not to disturb this favourable state. Practitioners of repute in former times were perfectly aware of the value of the above characters and the indications offered by the coagulated blood. Baglivi, in speaking of pneumonia and pleurisy, asserted that it was a bad sign when a white buff or coat was not formed on the blood. Huxham gave the same opinion on this sign in other inflammatory diseases. M. Louis states that he has observed that in one-fourth of the fatal cases of the above diseases there was no buff on the blood. Huxham made a free use of the lancet in the treatment of pneumonia, but was governed by the presence and characters of the inflammatory buff on the blood; and when they were unfavourable he stopped and "changed his battery." He insisted on the importance as a sign of an imperfect buffy coat.

When in inflammatory diseases the blood has no buffy coat, or it is thin and greenish, and the clot is soft, diffluent, and contains the larger part of the serum, there is a strong probability that the blood is in a morbid state, or contaminated with some poison. Patients with smallpox, or other eruptive fevers, when those diseases were prevalent as formerly, were frequently attacked with pneumonia; the buffy coat, it was then observed, was mostly absent or very imperfect.

Early in my practice, a case of pneumonia came to my notice in which no fibrin existed in the blood. When on a professional visit to the hospital of the old almshouse, I was requested to see a patient that had been brought there the previous afternoon. He was in so low a condition he could not be carried up to the men's medical ward, situated in the fourth story, and had been placed in an adjoining out ward. I found him evidently moribund, pulseless, with low temperature, difficult breathing, nearly unconscious, and in a low delirium. He died in a few hours.

The history of the case represents him as a perfect sot; and that, two nights before, being drunk, he had laid out in the street in a cold winter's night. He had been seen by a physician who said he had pneumonia.

The next day a post-mortem was made. On raising the sternum, the right side of the thorax appeared empty at the first glance, but on looking into it, the lung was seen lying flat on the back of the chest, resembling a sack filled with blood. On a closer examination it was found to be so softened as to tear with a slight effort; it was saturated with fluid blood; no coagula existed in the heart or vessels. This case made a strong impression on me, and was often cited in my lectures when treating of the blood and its coagulation.

The following table, from the *Essai d'Hématologie Pathologique*, par G. Andral, shows the division of the fibrin in five cases of acute inflammation; three of pneumonia, and two of acute rheumatism:—

1st case of Pneumonia:

Total fibrin, 9.2	Fibrin of buff, 8.1 Fibrin of clot, 1.1

2d case of Pneumonia :	
Total fibrin, 9	Fibrin of buff, 5.8 Fibrin of clot, 3.2
3d case of Pneumonia :	
Total fibrin, 7.3	Fibrin of buff, 4.8 Fibrin of clot, 2.5
1st case of Acute Rheumatism :	
Total fibrin, 8.7	Fibrin of buff, 7.0 Fibrin of clot, 1.6
2d case of Acute Rheumatism:	
Total fibrin, 9.2	Fibrin of buff, 7.5 Fibrin of clot, 1.7

John Hunter appears to have supposed that the bloodvessels possessed some special action in inflammation, and even in most of the vital actions. This doctrine was firmly held by the greater number of the profession thirty years ago in Europe and this country. It was common at that period to attribute the nutritive process, secretion, and most of the vital actions to "capillary action." It is now known as demonstrated by M. Cl. Bernard and M. Marey, that the vessels are passive, and their actions simply physical, being limited to expansion and contraction.

The immediate agents of the capillary circulation are the system of the arterioles, intermediate between the capillary system and the arteries, which are regulated by the sympathetic and the spinal nerves. The arterioles have been regarded as the termination of the arteries; but the differences of structure, especially in being largely provided with organic, unstriped muscular fibres, connected with the complex system of spinal nerves, the last of which includes a sympathetic nerve, and, having an independent action and function, they must be regarded as a distinct system. They are the regulators of the capillary system and its circulation, and not the heart and arteries. (M. Marey.) To explain the mode by which these operations are brought into action would extend this paper beyond its proper limits.

This form of inflammation is the only disease in which increase of fibrin occurs, and a buffy coat is always formed on the surface of the clot of blood drawn from a vein into a proper vessel. It is a special form of disease; it presents some other peculiar characters belonging to the red corpuscles, which acquire the property of adhering to each other when in contact, and forming rouleaus when free. In consequence they cannot circulate in the smaller vessels, which are blocked up by them, and the circulation of the diseased part is arrested. Prof. Lister supposes that they contribute, in this manner, to the exudation of the liquor sanguinis, enriched with fibrin.

The production of fibrin in the specific inflammation, the subject of this memoir, can effect its purposes in nature only when its constitution and its coagulating action are perfectly developed. This cannot take place except the blood, and especially the albumen, from which fibrin originates, is in a normal or healthy state. These conditions are variable, and then the fibrin is equally unstable in its character, and rendered unfit for its allotted office in physiological therapeutics. The causes that derange the constitution of the blood and fibrin, destroying its natural and remedial powers, are too numerous to recall; they can only be slightly indicated. Such are habits of life, modes of living, quality and quantity of food and drink, the quality of the air breathed, atmospheric contamination of various kinds, malaria, and prevailing epidemics. The disturbing action of these are most strikingly displayed in pneumonia. When the constitution of the patient is good, little more is required than to watch the course of the disease; the inflammation will take care of itself. It is the patient himself who is to be carefully looked too; his forces, which are to carry him through the conflict, are to be judiciously sustained, and all disturbing causes, moral and physical, guarded against. In cases of pneumonia, and when the antiphlogistic treatment had been fully carried out, convalescence is difficult and protracted. I have known two deaths to occur evidently from exhaustion. A limited portion of a lung had been the seat of disease, and was nearly restored to its natural state, and yet death took place with the disease extinct. Prof. G. B. Wood says there is reason to believe that in pneumonia patients have been starved.[1] In the Southern States, pneumonia, for many years, has been very prevalent in the latter part of autumn, and in the winter months. The death-rate of the cases was generally high, which was attributed to the effects of malaria.

In February, 1858, I had an opportunity of observing two cases of pneumonia, presenting the strongest contrast in every respect. The one was a perfect specimen of what may be termed regular, normal pneumonia; the other of an anomalous and irregular character.

The first was that of a gentleman of high reputation in the medical profession of our city. He was attacked with the ordinary symptoms of pneumonia on February 11, and treated himself the first four days. He had sharp pain on the right side; cough; the sputa was tinged with blood, and of a rusty colour. He did not lose blood generally or locally. He took pills of ex. hyoscyamus and opium, with regimen. On the fourth day he was attended by a medical friend. The first stage had passed, and the second; congestion and engorgement had taken place, causing oppressed breathing and restlessness; the fingers were bluish. Dry-cups were applied, and pills of calomel, opium, and ipecac prescribed. I saw him, in consultation, at 8 P. M. Auscultation and percussion proved that the third stage was rapidly advancing. The right lung was nearly solid; no râles were heard in front; some mucous râles were perceived behind. At the middle and lower part of the chest there was a dull sound. His colour was good; morale excellent. The sputa was now without colour. Strong soup was ordered.

19th. Had rested well; his skin was dry; there was no sound in the right lung; a perfect stillness prevailed. He relished his breakfast. The pulse was soft and full. The soup was continued.

20th. Improving; the tubular sound commencing.

21st. Respiratory sound returning just below the clavicle.

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[1] Wood's Practice of Medicine, vol. ii. p. 30.

23d. Right lung in same state. R.—Muriate of ammonia.

27th. Respiratory sounds returning.

March 1. Vesicular respiration not completely restored.

Soon after, I was requested to meet a medical friend in consultation in a case of pneumonia. It was in the tenth day, yet had not advanced beyond the second stage. The patient could not lie down; he was constantly expectorating pure blood. Examination demonstrated throughout both lungs gurgling râles, showing the blood fluid. No change was effected in this state, and two days after he died, expectorating blood to the close. I was assured that this patient was a gentleman of temperate habits and of regular life—he had suffered in his business from the commercial and financial crisis of '57–58. For many months he had almost daily been subject to mental anxieties and physical exertions, with irregularity in his meals—his place of business being remote from his residence. Is it possible that those causes can so disorder the blood as to render the transformation of albumen into fibrin impossible?

The views and principles presented in this paper are not recent with me. It is now over twenty years since I introduced them into my lectures; and taught that the increase of fibrin in the blood is a law of the animal organism, and a special agent intended for protection and repair. The process might properly be termed Fibrinous Inflammation.

ART. XV.—*Fracture of Pelvis at Symphysis Pubis and Rupture of Bladder.* By S. D. SEELYE, M. D., of Montgomery, Ala.

ARCHIE MASON, aged 32 years, a labourer engaged in excavating a railroad on the outskirts of the city, received an injury on the 2d July by the falling of a mass of earth weighing from one hundred and fifty to two hundred pounds, which was detached from the upper edge of the cut, a distance of twenty-five feet above him, and *slid* down the inclined plane, striking him in the back when partially bent while using the pickaxe. The mass prostrated him without crushing him beneath it. He was picked up and carried to his quarters, and thought not to be seriously hurt. The physician in charge of the hands, Dr. F. M. Hereford, was not sent for until the next morning; when, on examining the patient's back carefully, he found no ecchymosis; the abdomen was tympanitic and somewhat painful, but not very tender upon pressure; pulse 120, feeble; decubitus on back, with knees drawn up. Had passed no urine since the injury, but had emptied his bladder just before. Refers all severe pain to the sacrum, some fulness and slight ecchymosis in the perineum. Dr. Hereford with some difficulty introduced a catheter, but no urine flowed through it.

At this time I was requested by Dr. Hereford to see the patient with him. The catheter had been left in the urethra, and on withdrawing it about half an ounce of urine and some small coagula followed it. Not being satisfied that it had entered the bladder, chloroform was administered, and a No. 8 catheter tried; but the end of the instrument could not be depressed between the thighs; but with the finger in the rectum I could feel the point of the instrument beyond the prostate gland. No urine flowed through it, but, as before, upon withdrawing it, about half an ounce to an ounce followed the instrument.